



# SOCIO-ECONOMIC CHANGES AND ECONOMIC LOSS DUE TO RIVER BANK EROSION-A STUDY ON THE DISPLACED PEOPLE OF MAJULI DISTRICT OF ASSAM

Sailen Dutta<sup>1</sup>, Dr (Mrs.) Nayanmoni Borgohain Baruah<sup>2</sup>

<sup>1</sup>Research Scholar, Department of Economics, Dibrugarh University

<sup>2</sup>Assistant Professor, Department of Economics, Dibrugarh University

## ABSTRACT

River bank erosion creates socio-economic problems in Assam. The river bank erosion effects are social and economic aspects of the people. The riverbank erosion also affected in earning sources and creates some social problems such as health, education; housing etc. This leads the problem like displacement. The riverbank erosion has long term impact on livelihood and changes the livelihood pattern of people. Maximum displaced people need to change their inhabitant to nearby cities in search of jobs.

**KEYWORDS:** River bank erosion, socio-economic impact, displacement, livelihood.

## 1. INTRODUCTION:

The displacement of people refers to the forced movement of people from their locality or environment and occupational activities. It is a form of social change caused by a number of factors such as armed conflict, natural disaster, famine, development and economic changes etc.

In regard to population displacement resulting from development there are typically two types – Direct displacement and indirect displacement. Direct displacement leads to actual displacement of people from their locations. On the other hand, indirect displacement, leads to a loss of livelihood.

A displaced person is a person who has been forced to leave his or her native place, a phenomenon known as forced migration. The term was first widely used during World War II and the resulting refugee outflows from Eastern Europe (Mark Wyman), when it was used to specifically refer to one removed from his or her native Country as a refugee, prisoner or a slave labourer. A displaced person may also be referred to a forced migrant. The term 'refugee' is also commonly used as a synonym for displaced person, causing confusion between the general descriptive class of anyone who has left their home and the subgroup of legally defined refugees who enjoy specified international legal protection. A.J. Jaffe claimed that the term was originally by Eugene M. Kulischer. According to U.N. Convention relating to status of Refugee if the displaced person has crossed an international border and falls under one of the relevant international legal instruments, he is considered as refugee. A forced migrant who left his or her home because of political persecution or violence but did not cross an international border, is commonly considered to be the less well defined category of internally displaced person (IDP) and is subject to more tenuous international protection. Moreover persons are often displaced due to natural or man made disasters. Displacement can also occur as a result of slow onset climate change, such as desertification or sea level rise. A person who is displaced due to environmental factors which negatively impact his or her livelihood is generally known as an environmental migrant. Such displacement can be cross-border in nature but is frequently internal. No specific international legal instrument applies to such individuals. Foreign nations often offer disaster relief to mitigate the effects of such disaster displacement. Bogumil Termiski distinguishes two general categories of internal displacement i.e., (i) Displacement of risk (mostly conflict induced displacement, deportations and disaster-induced displacement) and (ii) Displacement of adaptation (associated with voluntary resettlement, development-induced displacement and environmentally – induced displacement). The UNHCR opposes the use of the term 'refugee' in reference to environmental migrants as this term has a strict legal definition. (Richard Black)

A sudden impact such as a natural disaster or conflict triggers the displacement of populations. Displaced populations leave their homes in groups, usually due to a sudden impact such as an earthquake or a flood, erosion of river bank threat or conflict. There is usually an intention to return home. It is mentionable that migration and displacement are interlinked but must be distinguished. Displaced populations – either across borders such as refugee influxes, or within a country because of disasters or armed conflict usually need relief operations combined with efforts aiming at collective and lasting solutions. On the other hand migration usually involves more individual social assistance, legal protection and personal support.

Riverbank erosion is a significant problem worldwide and is associated with land

loss and deposition of sediments along the river course. Land loss as a consequence of riverbank erosion not only threatens the existence of infrastructures or agricultural lands near to the riverbank but also poses threat to aquatic habits and causes sedimentation downstream due to the generation of fine-grained sediments (Darby & Thorne, 1995). In India, most of the hydrological challenges are owed to the high sediment load of the rivers which ultimately results in riverbed aggradations, bank erosion and channel widening (Thakur et al., 2012). Besides riverbank erosion in the rivers of Brahmaputra, Barak and Ganga basin is also caused due to high flood discharge in the river, bed slope and composition of bed and bank materials. The land lost once due to riverbank erosion cannot be compensated by the riverine landmass that is built up by the river itself in due course of time.

Riverbank erosion is also a factor responsible for the displacement of people. Soil is removed naturally by ocean currents, river water, ice wind or living organisms and is called erosion. This displacement of soil, mud, rock and other particles has been occurring for over 450 million years. Erosion is a natural process and can be healthy for the ecosystem but oftentimes is made worse by human use such as deforestation/removal of vegetation, overgrazing, unmanaged construction or building of roads. Excessive erosion can produce trouble such as ecosystem damage, loss of soil and receiving water sedimentation. It also displaces people's habitats. So, the effects of erosion are sometimes linked to overpopulation through migration of people from one place to another. Unlike the all India scenario, of all types of natural disasters, erosion borne hazard in the Brahmaputra valley is much more serious. The erosion on the other hand makes the peasants landless overnight. So, displacement is a serious problem in Assam. For economic development permanent settlement of the people is very essential. But due to erosion, people have to displace/migrate even within a year or more. Therefore, they can't start permanent business. Specially, agriculture sector is severely affected. Moreover, erosion leads to large scale migration of people from one area to different areas. In this context the study of erosion and its impact is highly essential.

The earth quake of 1897 and 1950 has changed the structure of the land of Assam. Due to high rainfall, deforestation, shifting cultivation, unplanned embankment and caring of siltation and fall down river bed and accumulation that decline the capacity of holding water where cause flood and erosion. River bank erosion is caused to damage of cropland and infrastructure including roads and bridge also inhabiting land of people.

River bank erosion creates socio-economic problems in Assam. The river bank erosion affects are social as well as economic. The river bank erosion also affected in earning sources and creates some social problems such as health education, housing and water etc of the people. Which creates directly economic and social problem like displacement.

### 1.1. Effects of River bank Erosion:

Effects of river bank erosion are multifarious viz. social, economic, health, education and sometimes political. The first and foremost impact is social, i.e. homelessness due to land erosion which compels people to migrate (Tuhin K. Das, et.al, 2014). After forced migration they suffer from economic crisis, namely loss of occupation and loss of property and they are at the risk of poverty and sometimes they involve in criminal activities (Ikbal, 2010).

The main effects of river bank erosion can be divided into three broad categories. They are:

**1.1. (i) Social effect:** The first and foremost effect of river bank erosion is social, i.e., homelessness due to land erosion which compels people to migrate. After forced migration they suffer from identity crisis, poverty etc. Moreover due to river bank erosion structure of joint family is destroyed.

**1.1. (ii) Economic effect:** After forced migration people suffer from economic crisis, which includes loss of productive land, loss of occupation. Moreover they suffer from indebtedness, low investment etc.

**1.1. (iii) Other effects:** Besides social and economic effects there are some other effects of river bank erosion. Due to loss of occupation they lack money to spend for purposes other than essential items like food and shelter, even if the medical and education facilities exist in their newly occupied places. Results are their poor health, sickness and illiteracy of their children. So, they are affected psychologically also.

The above are the main socio-economic impacts of the river erosion. River erosion problem of Assam create acute socio-economic problem in Assam economy. In Assam, recurring floods are associated with severe river bank erosion causing havoc to the affected people. Against this backdrop the present study is an attempt to analyses economic effects of riverbank the erosion upon the displaced people of Majuli Sub-Division of Jorhat District of Assam. The river erosion damages lots of production every year. Moreover loss live stocks and other roads embankment bridge destroyed because disastrous flood in Assam leads to accelerate erosion.

## 2. SIGNIFICANCE OF THE STUDY:

Study of the economic effects of displacement due to river bank erosion acquires significance because river bank erosion has long term and severe repercussions on human life. The victims are compelled to displace as they become destitute. On the other hand, the altered flow of rivers (natural or manmade) due to bank erosion also affects river ecology. Human vulnerability is of greatest extending, where settlements are dangerously close to eroding banks. Therefore mapping of the spatial distribution of vulnerability of the people residing along the river bank is very much required to understand the severity of the problem (Kienberger et.al. 2009). Landscape degradation, environmental and socio-economic impacts are observed in different countries at different scales due to river bank erosion. But quantitative information on socio-economic consequences of river bank erosion (viz., total human displacement, loss of occupation, loss of property, impact on health and education, etc.) for all the cases, however small it may be, is not available unlike other natural disasters. But this type of attempt is highly needed to quantify the human vulnerability due to river bank erosion, and in turn to formulate appropriate public policy. Also a comparison is possible with before and after displaced of the people, i.e., changing their occupation pattern, livelihood process, standard of living etc. Most of the studies on Brahmaputra river bank erosion in Assam have been aimed at identifying factors causing erosion and assessment of eroded geographical area. It is mentionable that Brahmaputra bank erosion has wiped out a large area including human settlements, productive crop land and reserve forest area. However, little effort has been made to quantify the loss due to this erosion though it is often reported that Brahmaputra River bank erosion causes poverty, has a long term impact and there is no compensation mechanism (Talukdar, 2012). So an attempt has been made to study Majuli one of the badly erosion effected area of Assam. If we give attention in the study area then it proves the significance of the study from the magnitude of the erosion. It has noticed that in Majuli till the year 2001 about 78 revenue villages had been affected by severe erosion and accordingly hundred sq.k.m.area suitable for agricultural land and residential area had submerged into the Brahmaputra River; many of the villages had shifted to Darang District, Titabar and Jorhat circle ( Census Report 2001) . The island's total area has reduced to only 421.65 sq.km.by the year 2001 (Sharma and Phukan, 2003).

## 3. OBJECTIVES OF THE STUDY:

The study will be based on following objectives:

- (i) To examine the socio-economic changes of the displaced people from Majuli Sub-Division due to displacement caused by river bank erosion.
- (ii). To examine the economic loss of the displaced people of the study area.

## 4. RESEARCH QUESTION:

The study is based on the following Research Question:

- (I). Whether there has been a change in the type of work of the displaced people?

## 5. METHODOLOGY:

The study will be basically based on primary data collected from the displaced people of Majuli Sub-division who were rehabilitated by the government during 1999 to 2006 at different parts of Jorhat and Golaghat districts of Assam. From the source of Sub-Divisional Disaster Management Plan Majuli, 2014 there are found total 4453 numbers of displaced families which were rehabilitated by the

government at different parts of Jorhat and Golaghat districts of Assam. There are six numbers of Revenue circles in Jorhat District, namely Jorhat East, Jorhat West, Titabor, Marioni, Majuli and Teok Revenue Circles. As per official records 4453 families of Majuli were rehabilitated in these Revenue Circles. And in Golaghat district there are also six numbers of Revenue Circles namely Golaghat, Bokakhat, Dergaon, Sarupather, Morongi and Khumtai. For our study Dergaon Revenue Circle is selected purposively because as per official records this is the only Revenue Circle where the people from Majuli were rehabilitated in Golaghat district by the government. The primary data has been collected with the help of Scheduled Questionnaires from the head of the families. Key Informant Interview will also be adopted wherever required. Key Informant Interview are qualitative in-depth interviews with resource persons including community leaders, professionals or residents who have first-hand knowledge about the concerned issue. Appropriate statistical tools are used wherever necessary. It is proposed to use purposive random sampling technique in the selection of the families keeping in view that the SC, ST and General people are adequately represented. It is again proposed to collect 15% of samples from each Revenue Circle in the study area. The details of the rehabilitated families of the study area and samples to be collected can be shown in the following table:

**Table1: Sample Design**

SL. No.	Study Area	Total No. of rehabilitated families	Sample size (15% of the families)
1	Titabor Revenue Circle in Jorhat District	2524	379
2	Jorhat West Revenue Circle, Jorhat District	146	21
3	Marioni Revenue Circle in Jorhat District	1326	199
4	Jorhat East Revenue Circle in Jorhat District	101	15
5	Teok Revenue circle in jorhat district	122	18
6	Saar Ati in Majuli Revenue Circle in Jorhat District	26	4
7	Dergaon Revenue Circle, in Golaghat District	106	16
8	Bhokot Chapori in Majuli Revenue Circle in Jorhat District	40	6
9	Tatibari in Majuli Revenue Circle	62	9
	Total	4453	667

To supplement the primary data secondary data will be used published by different government offices as well as relevant, historical reports, journals etc.

## 6. REVIEW OF LITERATURE:

Review of literature is one of the important parts of research which helps to know the concept of the topic, its theoretical framework, existing situation and the relevance of the research topic. It also helps to use appropriate methodology and to contextualize the findings. River bank erosion is a common geomorphologic process of alluvial floodplain rivers. It corresponds to bank adjustment, bank trampling, navigations, changes in bed elevation and topography in reaction to modified flow conditions (stream power, bed load) or bank resistance, exceptional flooding and rising intensity of tidal waves (Lane, 1955; Madej, et al., 1994; PieÁgay and Bravard, 1997; Chowdhury et al., 2007). In Bangladesh, riverbank erosion is a regular phenomenon which is located in the delta of some of the world's largest rivers- the Ganges, the Brahmaputra and the Meghna. Bank erosion and channel shifting of the untrained alluvial rivers of Bangladesh are big problems to the socio-economic and environmental sector of the country (Klassen, et al., 2002).

According to Mahbuba Kaniz KeYa and S.M. Rafael Harun (2007) Natural disasters (flood, riverbank erosion, tornados, earth quake etc.) create extreme stressful experiences on victim's life. Extreme stressors threaten societal well-being as well as overwhelm individual's coping ability with family and community. Riverbank erosion severely challenges victims' basic values, shelter and security that produces extreme feeling of loss and makes people vulnerable and helpless. People always try to obtain, retain and protect that which they value. Loss of own land, assets and shelter call forth chain of losses i.e. residential displacement, job disruption, destruction of crops and property etc. These stressors come in multiple shock waves for a long time. Sudden attack of riverbank erosion without any warning creates excessive demands on the victims and the demands for action exceed the capabilities for response in such a crisis situation of resources threaten their security of survival; they feel loss of control which hinder their capacity to use psychosocial resources effectively and encounter the crisis successfully.

Displacement is one of the serious issues which also create conflict. In this context, Gordenker (1990) outlines many types of conflict that give rise to a refugee situation: international war; internal disturbances; deliberate changes within the social structure due to political transformation; and international political tension.

Flood and riverbank erosion are two of the major environmental disasters that the country experiences recurrently and an estimated one million people are displaced every year due to riverbank erosion in the country (Elahi and Rogge 1990). It is reported by Elahi and Rogge (1990) that while one million people were displaced by flood and erosion in Bangladesh, it is not less than ten thousand people in Murshidabad alone. It is also recorded in the same article that 79,190 people were displaced during 1988 to 1994 in Murshidabad alone for flood and land erosion. The displacement at Malda for the same was not lagging behind in facts and figures (Rudra 2003). This adversity is further worsened when the devastating flood and riverbank erosion together intensified the process of pauperization in rural areas in Bangladesh (Rahman, A 1986; Karim 1990; Islam 1999; Jahangir 1979). At this critical situation, the displaced and the victims from natural disasters face multi-dimensional environmental problems resulted from flood and erosion. They have to adapt to the changing conditions of many socio-political, economic and cultural strategies in order to survive in the face of the plethora of problems. The flood and riverbank erosion displaces try to gain control over their environment through their multi-dimensional adaptation strategies.

Erosion, as it affects man and its environment, is natural and as old as the earth itself (OMAFRA Staff, 2003). It is seen as the gradual washing away of soil through the agents of denudation which include, wind, water and man (Abegunde, et al 2003). These denudating agents loose, wear away, dislodge, transport and deposit wear off soil particles and nutrients in another location.

According to Hussain, Monirul (2006) in a un-precedented flash flood in October 2004 nearly 1,000 people died in Goalpara district. The government provided relief to some of these flood-affected people which was far from adequate. The situation demands proper and scientific assessment, adequate relief and rehabilitation measures. It is not only the flood that pushed the people of Assam into an uncertain future; the riverbank erosion too has affected millions of people. Over the years, environmental insecurity has increased substantially. According to an official report, the river Brahmaputra eroded 429,657 hectares of prime agricultural land. Roughly, 7 per cent of the land in the plains has been eroded between 1951 and 2000. This has definitely displaced at least three million peasants. Today, they constitute the most pauperised community in Assam's plains. In the absence of proper resettlement and rehabilitation policy, most of them have experienced multiple displacements. In the absence of a proper database, it is difficult to ascertain the number of development-induced IDPs in North-East India. In India, among all Eastern and North-eastern states, Assam faces the most severe brunt of Brahmaputra bank erosion. According to the records of the last century, the Assam valley portion of Brahmaputra River occupied around 4000 km<sup>2</sup> in the 1920s, which is now around 6000 km<sup>2</sup> (Phukan et al., 2012).

A qualitative study in Mandia Block of Barpeta district revealed that people on the eroded land migrated to the nearest villages, towns and even to some reserve places of Assam due to Brahmaputra River erosion (Khan, 2012). In Mandia Block agriculture was the primary occupation of the majority of the people. But due to bank erosion there was loss of agricultural land, which in turn has increased the number of landless labourers. The percentage of landless labourers among the working class in the study area was nearly 90 percent, whereas it was only 16 percent in Barpeta district, where this block belongs. Decreasing agricultural land due to erosion and at the same time increasing number of landless labourers had obviously an impact on their livelihood. This was observed from a growth in number of poverty stricken people in Mandia Block. The portion of population below the poverty line in this block was more than double of that in Barpeta district.

In addition to soil productivity loss, another key impact from soil erosion is direct damage to private and public property. This damage may include repairs to farm infrastructure, residential and industrial buildings and transportation utility and recreation networks. Rohmoría is an area which is severely affected by river borne erosion. It is located about 20 kms away from Dibrugarh town in the upstream direction of the south bank of the Brahmaputra River. Rohmoría falls under Chabua Revenue Circle of Dibrugarh District. The entire area situated to the north of Rohmoría comprised several small settlements, swamps and dense mixed jungles till 1996. The Dibrugarh-Rangagora-Tinsukia (DRT) Road, a historical highway passes through and links Rohmoría with both Dibrugarh and Tinsukia Townships by regular transport services. But the Brahmaputra River had not only eroded away all those resources along with the DRT road, but also has been eroding presently the villages around Rohmoría. The erosion of the Brahmaputra at Rohmoría has resulted in a 4-5 m. high vertical erosion scarp, which spans linearly at a stretch for about 9 k.m. (Sarma & Acharjee, 2012). Rohmoría area has the highest rate of bank erosion in the south bank of the Brahmaputra (Sarma & Phukan, 2006). In the aftermath of the great earthquake in 1950, the Brahmaputra channel belt started inflating in the Dibru-Saikhoa segment causing rapid bank line migration in both the north and the south banks. By 1979, a significant portion of the Dibrugarh, Rongagorah, Tinsukia metalled

road, the main link that used to connect Rohmoría with the two important townships of Dibrugarh and Tinsukia, was cut heavily due to this erosion (Lahiri, S. K., Borghain, J., 2011). Unlike the all India scenario, of all types of Natural disasters, erosion borne hazard in the Brahmaputra valley is much more serious. This is due to fact that more than 80% population of the state is associated directly or indirectly with the agrarian relationship. In floods, magnitude of ideas daily labourers' losses might be great, sometimes perennial, yet temporary. Many of the self-dependent peasants just become landless labourers overnight due to the massive rate of erosion. A huge number of families have been displaced. The rehabilitation measures are yet to reach most of the deserving families. For most of the victims there remains no other option other than working as daily labourers in nearby areas. The female residents of local villages, who had no prior experience of working as labourers in the tea gardens, were forced to overcome all kinds of inhibitions associated with the conventional practices and accept the option. One noteworthy development in this erosion ridden area is that some of the inhabitants searching desperately for alternative source of earning besides agriculture are running illegal saw mills based on the wooden logs coming down through Brahmaputra from the upstream part of Arunachal Pradesh where deforestation continues to occur. Interestingly, the government incapable of controlling deforestation by illegal nexus seize the logs and sell through auction to big mill owners (Borghain, J. 2011).

Majuli, a Sub-division of Jorhat district located in the state of Assam severely affected by river bank erosion. At Majuli the Problem of flooding is acute along the river channel of Brahmaputra too. Majuli, the world's largest inhabited river island has been shrinking in size over the years due primarily to the phenomenon of river bank erosion leaving only 421.65 sq.km of the island by the year 2001 rendering hundreds homeless especially during floods. Needless to mention, this accelerated rate of shrinking in the size of the island cannot be without its impact on the society, economy, demography and culture. An important dimension of the problem relates to redistribution of people on account of the loss of villages, agricultural land and other economic support base. Along with the problem of flooding the area is also associated with other flood induced hazards like river bank erosion, embankment breach, road breach; Sand Casting etc. The Island has been shrinking in size over the years due primarily to this phenomenon of bank erosion. River bank erosion can cause complete loss of farm and homestead land and leave the poor in a totally helpless state without a source of income and livelihood, or even a house. It destroys the existing modes of production and ways of life, affects kinship and community organization and networks, causes environmental problems and impoverishment and threatens cultural identity of the people. Displacement due to river erosion continues to create impoverished families. People living in the marginal lands are severely affected and have to develop mechanisms to cope with this reality. They however cannot escape the prospects of displacement and rehabilitation when the situation goes beyond their control. Forced resettlement tends to be associated with increased socio-cultural and psychological stresses and higher morbidity and mortality rates. Population displacement therefore disrupts economic and socio-cultural structures. People who are displaced undergo tremendous stress as they lose productive resources – land or otherwise in the adjustment process. Resettling the displaced poor and economically disadvantaged is not always an easy task. Majuli, one of the inhabited fresh water river island in the world happens to be a major seat of rapid social, demographic, cultural and economic change due to flood induced river bank erosion which is taking place at an alarmingly increasing pace year after year. Erosion is likely to submerge the river island in next 15 – 20 years. At stake is the glorious heritage of Assamese culture (already 29 satras vanished out of 65 satras). Population is increasing inspite of exodus due to displacement and per capita cultivable land holding is diminishing consequent threat on culture, socio – economy and ecology. It is a problem region and is a region perceived as highly “vulnerable”. The island's total area has reduced to only 421.65 sq.km by the year 2001 (Sharma and Phukan, 2003). It has been noted that in Majuli till the year 2001 about 78 revenue villages had been affected by severe erosion and accordingly hundred sq.km. area suitable for agricultural land and residential area had submerged into the Brahmaputra River; many of the villages had shifted to Darang district, Titabar and Jorhat circle (Census Report 2001). Many historical records reveal that Majuli, the hub of 'Vaishnavite' monasteries, suffered from several large floods that devastated the area causing extensive flood inundation and severe bank erosion. (Sarma & Phukan, 2004). Geomorphologically, Majuli forms a part of the floodplains of Brahmaputra river and thereby continuously facing serious problems of flood hazard (due to the influence of SW monsoon) and river bank erosion which has posed a threat to its rich cultural heritage and its existence as well. (Kotoky et.al.2003). Different research works done at different time periods show that the average annual rate of erosion has been increasing at an alarming rate.

After 1950, flood and erosion problems create a pathetic condition which have changed the natural and human ecology by reducing total geographical area. In this situation from 1969 to 2011 the like Bagharchuk, Lahakar, Boramari, Chinatoli, Gopalpur, Rawomora, Sakawpara, Auniati Bamungao, Boralengi, Kartic Chaporí, Dakhinpat, Kaibarta Gaon, Kamalpur, Pirna Kamalabari, Juginidhara Kohagaon, Alimur Missing, Dhuwpara and whole Ahatguri Mouza were vanished by erosion and government support in different parts of the state according to their will and economic strength. Due to continuous flood and erosion problems year after year, the situation has been worse day by day. The great floods of 1998, 2008 and 2012 created great havoc in Majuli and the people of



some villages like Salmora, Besamora, Chinatoli, Samoimari, Kaniajan, Botamari, Khora Holla etc. lost their land property including houses also. Lack of self financial strength they have not been also to shift their settlement to a better and safe place in or outside Majuli.

In case of this we should tried to find out the pattern of resettlement to these affected people buy the government. In this regard giving settlement facility to the flood and erosion affected people of Majuli government have been taking a significant role. From 1969 onwards the government of Assam and revenue department have taken so many steps to resettle the displaced families in Majuli and different places of the nearby districts. Due to their poor economic condition of the affected people they are unable to resettle permanently without the help of the government.

From the source of Sub-divisional Disaster Management Plan Majuli, 2014 total number of 4325 families got resettlement permanent in different places of outside Majuli viz., Jorhat West Side (146), Jorhat East Side (101), Titabar (2524), Morani (1326), Dergaon (106). On the other hand 128 families got permanent settlement inside Majuli viz. Talibari (62), Bhakatchapori (40) and Sarati (26).

During 43 years a long time period (i.e., 1969-2011) government gave permanent settlement to 4453 families out of which 4325 families got settlement permanently outside Majuli and the rest in Majuli which was a significant act of government in case of resettlement of poor flood affected people.

But due to lack of suitable settlement area and lack of proper government policies in case of resettlement of erosion affected people, government and the revenue department of Majuli unable to gave permanent resettlement facility to 5113 families, which take shelter on E&D, P.W.D. roads and Char and Chapories of the Brahmaputra. (Circle Office, Kamalabari, Majuli). The economic condition of these people is so bad that they have been suffering from basic needs to lack of public institutions and facilities like hospitals, schools, post office, Transportation system etc. as well as fair and festival. Actually there is degradation of their socio-economic condition as well as very threat to survival of their new generation as they deprive from the basic needs and rights. There is very long lasting effect of flood and erosion on these displaced people. Their shifting and settlement is very temporary, because there is every possibility that the advancing river would very soon submerge their new localities and they need to shift another place as happened in case of Salmora, Besamora, Sumoimari, Ahatguri etc. At present there is not enough vacant land in which large number of people can settle. So, due to temporary settlement their economic conditions study is not relevant because of their temporary shifting all economic behaviour is temporary. Hence our main focus is to study the economic effects of the permanent resettlement people which were displaced due to river bank erosion. An attempt is made to comparison with before and after displaced of the people. i.e. changing their occupation pattern, livelihood process, standard of living etc.

## 7. SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF THE RESPONDENTS:

During the study following socio-economic and demographic characteristics have found to see, which depicts the gender of the respondents, education level of the respondents, type of family etc.

### 7.1 Gender of the Respondent:

Table 7.1 summarise the gender of the respondent drawn from the study. The table shows that most of the total respondents i.e., 93.4 % are males while the rest 6.6 % are females. This suggests that most of the respondent heads in the study area are males.

Table 7.1 Gender of the Respondent

Gender	No. of Respondent	Percentage
Male	623	93.4
Female	44	6.6
Total	667	100.0

Source: Field Survey, 2018

### 7.2 Caste of the Respondent:

Table 7.2 Caste of the Respondent

Caste	Frequency	Percentage
ST	168	25.2
Sc	192	28.8
OBC	207	31.0
General	100	15.0
Total	667	100.0

Source: Field Survey, 2018

Table 7.2 reveals the caste of the respondent. The table shows that 25.2 % of the

respondents are ST, 28.8 % respondents are SC, 31.0 % of them are OBC and 15.0 % of the respondents are General caste.

### 7.3. Age and Marital Status:

Table 7.3.(i) Age of the Respondent

Age (Years)	No. of Households	Percentage
Below 45	27	4.00
45-55	45	6.80
55-65	520	77.96
65-70	53	7.95
70+	22	3.30
Total	667	100.0

Source: Field Survey, 2018

Among the respondents number of respondents aged below 45 years is only 4 % and number of respondents aged above 70 years is only 3.3%. Highest number of respondents 77.96% is between 55-65 years. Table 7.3.(i) also reveals that persons aged between 45-55 years and 65-70 years is 6.8 % and 65-70 years is 7.95 % respectively.

Table 7.3. (ii) Marital Status of the Respondents

Status	Frequency	Percentage
Unmarried	3	0.4
Married	636	95.4
Widowed	28	4.2
Total	667	100.0

Source: Field Survey, 2018

Table 7.3 (ii) depicts that among the respondents only 0.4 % are unmarried. Others 95.4 % are married and 4.2 % are widowed of the respondents.

### 7.4. Educational level of the Respondent:

Table 7.4 reveals that about 29.9 % of the respondents are illiterate and 70.1 % of the respondents are literate. Only 9.9 % of the respondents have received education level up to graduation. 47.8% respondents are not able to get education up to primary level. About 6.1 % of the respondents are able to complete primary to high school only. 6.3 % have studied up to matriculation and undergraduate level.

Table 7.4 Education Level of the Respondent

Education Level	Frequency	Percentage
Illiterate	199	29.9
Below Primary	319	47.8
Primary to High School	41	6.1
Matriculate & Undergraduate	42	6.3
Graduate	66	9.9
Total	667	100.0

Source: Field Survey, 2018

### 7.5 Present monthly Income of the Respondents:

Table 7.5 Present monthly Income of the Respondents (Average in Rs.)

Income (In Rupees)	Frequency	Percentage
1000-5000	443	66.4
6000-10000	74	11.1
11000-15000	1	0.1
16000-20000	47	7.1
More than 20000	102	15.3
Total	667	100.0

Source: Field Survey, 2018

It is evident in the table 7.5 that more than fifty percent i.e., 66.4 % of the respondents earning between Rs.1000 to Rs.5000 per month. 11.1 % of them earned between Rs. 6000 to Rs. 10,000, only 0.1 % of them earned between Rs.11000 to Rs. 15000, 7.1 % earned between Rs 16000 to Rs.20000. Only 15.3 % of them earned Rs 16,000 to Rs. 20000. And 15.3 % of them earned above Rs. 20,000 per month as the time of this study. This implies that most of the respondents displaced are due to river bank erosion low income earners as at the time of the study.

## 7.6. Respondents Household Size:

Table 7.6 No. of Family members in the Household

No. of Family members	No of Households	Percentage
4-5	472	70.8
6-7	176	26.4
8-9	19	2.8
Source: Field Survey, 2018	667	100.0

## 8. SOCIO-ECONOMIC CHANGES DUE TO RIVER BANK EROSION:

The displacees were forced to accept their loss due to riverbank erosion displacement. They did not have any alternative way of loss acceptance as they failed to protect their cultivable land, homestead plot and other valuable properties from cataclysm of the riverbank erosion. The displacees accepted their loss due to erosion. Riverbank erosion displacement breakdown the family structure, socio-economic characteristics also changed. How displacement changes people livelihood pattern as well as economic behaviour this picture will be clear from a comparative study between past and present situation of the respondent. Due to river bank erosion various types of socio-economic changes have been seen. The changes are as follows:

## 8.1 Type of family:

Displacement changed the family type. The table 8.1 reveals that before displacement 88.8 % families were maintaining joint family and 11.25% were nuclear families. But after displacement 64.8 % families adopted nuclear family and rest of the 35.2% families have maintained joint family.

Table 8.1 Type of respondent family

Family Type	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Nuclear	75	11.2	432	64.8
Joint	592	88.8	235	35.2
Source: Field Survey, 2018	667	100.0	667	100.0

## 8.2 Type of the house:

Table 8.2 reveals that before displacement only 3.3 percent household were pucca houses, 51.1 percent respondents had semi pucca houses and rest 45.6 % households had kutcha houses. But after displacement due to riverbank erosion government provided rehabilitation to the affected families so the situation is totally revised. After displacement 80.8 % of the household get the opportunity to construct pucca houses, 16.2% of them built semi pucca houses and 3% of them built kutcha houses.

Table 8.2 Type of the house:

Type	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Kutcha	304	45.6	20	3.0
Semi Pucca	341	51.1	108	16.2
Pucca	22	3.3	539	80.8
Source: Field Survey, 2018	667	100.0	667	100.0

## 8.3. Source of Lighting:

Table 8.3 Source of Lighting

Source of lighting	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Electricity	20	3.0	664	99.6
Kerosene	633	94.9	3	0.4
Others	14	2.1	0	0
Source: Field Survey, 2018	667	100.0	667	100.0

The above table shows that before displacement 94.9 % of the households used kerosene as a source of lighting, 3% of them used electricity and 2.1 % of households used other sources as lighting source. On the other hand after displacement the picture has totally changed i.e., 99.6 % of them use electricity as a source of lighting and only 0.4 % of them use kerosene as a source of lighting.

## 8.4 Toilet Facilities:

Table 8.4 Toilet Facilities

Type of Toilet	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Sanitary	0	0	417	62.5
Pit	611	91.6	250	37.5
Open	56	8.4	0	0
Source: Field Survey, 2018	667	100.0	667	100.0

Study reveals that before displacement the people did not have any sanitary toilets but after displacement the households of 62.5 % of the households are using sanitary toilets. From table 8.4 reveals that before displacement 91.6 % of households used pit toilet but after displacement 37.5 % of households are using pit toilets. Moreover it has been seen that before displacement 8.4 % of households did not have any toilet facilities, they used open spaces which was very dangerous for the public health but after displacement open defecation has been found to be nil.

## 8.5 Bathroom Facility:

Table 7.11 reveals that before displacement no households had pucca bathroom. But after displacement 52.6 % of household got the facilities to use pucca bathroom. Before displacement 36.7 % of household used kutcha bathroom whereas after displacement none of them used kutcha bathroom. Again before displacement 63.3 % of households used open for taking bath but after displacement none of them use open place as bath place.

Table 7.11 Bathroom Facility

Type of bathroom	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Pucca	0	0	351	52.6
Kutcha	245	36.7	316	47.4
Open	422	63.3	0	0
Source: Field Survey, 2018	667	100.0	667	100.0

## 8.6 No. of living rooms before and after displacement:

Table 8.6 No. of living rooms before and after displacement

No. of Living Rooms	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
2	0	0	1	0.1
3	11	1.7	137	20.5
4	109	16.3	233	34.9
5	316	47.4	258	38.7
6	147	22.0	38	5.8
7	84	12.6	0	0
Source: Field Survey, 2018	667	100.0	667	100.0

Table 8.6 reveals that before displacement 1.7 % of the households had only three rooms, 16.3 % of them had four rooms, 47.4 % of them were five rooms, 22 % of them had six rooms and 12.6 % households were seven living rooms. On the other hand after displacement 0.1 % household arranged two living rooms. 20.5 % were able to arrange three living rooms. Whereas 34.9 % of households were able to arranged four numbers of living rooms. Again 38.7 % households arranged five numbers of living rooms. Only 5.8 % of them were able to arrange six numbers of living rooms.

## 8.7 Number of beds used before and after displacement:

Study reveals (table 8.7) that before displacement more than fifty percent of households (51.3%) used 2 to 4 number of beds. 21 % of the household used 4 to 6 number of beds, 27.6 % of household had 6 to 8 number of beds used. On the other hand after displacement 57.6 % households arranged 2 to 4 numbers of beds, 21.3 % household arranged 4 to 6 number of beds, 19.1 % households arranged 6 to 8 number of beds and only 2 % of them arranged 8 to 10 number of beds.

Table 8.7 Number of beds used before and after displacement

Number of beds	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
2-4	342	51.3	384	57.6
4-6	141	21	142	21.3
6-8	184	27.6	128	19.1
8-10	0	0	13	2.0
Source: Field Survey, 2018 Total	667	100.0	667	100.0

### 8.8 Source of Drinking Water:

Table 8.8 reveals that 0.9 % of the households used common water tap, 1.7 % of them used common tube well, 6.5 % used separate tube well, 1.6 % of the households used common well, 4 % used separate well and 85.3 % of them used pond/river etc. as a source of drinking water before displacement. On the other hand after displacement 2.1 % are using common water tap, 4.5 % are using separate water tap, 27.2 % of the households are using common tube well, 53.2 % of them are using separate tube well, 6.8 % of them are using common well and 6.2 % of the households are using separate well. It is mentionable that after displacement none of the households are using ponds/ river etc. as a source of drinking water.

**Table 8.8 Source of Drinking Water**

Source of drinking water	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Common Water tap	6	0.9	14	2.1
Separate Water tap	0	0	30	4.5
common Tube well	11	1.7	182	27.2
Separate Tube well	43	6.5	355	53.2
common Well	11	1.6	45	6.8
Separate Well	27	4.0	41	6.2
Pond/river etc.	569	85.3	0	0
Source: Field Survey, 2018 Total	667	100.0	667	100.0

### 8.9 Source of Fuel:

Table 8.9 reveals that before displacement all the sample households (100%) used fire wood as a source of fuel for cooking purposes. But after displacement only 1.3 % of them are using firewood as source of fuel for cooking. The table shows that 7.6 % of the households use kerosene, 0.1 % use coal, 78.8 % of households use LPG and 12.2 % of the households use other sources of fuel like heater, biogas etc.

**Table 8.9 Source of Fuel**

Source of Fuel Used	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Fire Wood	667	100.0	9	1.3
Kerosene	0	0	51	7.6
Coal	0	0	1	0.1
LPG	0	0	525	78.8
Other (heater/Biogas etc.)	0	0	81	12.2
Source: Field Survey, 2018 Total	667	100.0	667	100.0

### 8.10 Homestead land used:

The severe impact of the riverbank erosion is the loss of homesteads that makes the population more vulnerable to live a decent life. When erosion strikes, people have no option to leave behind except bearing the losses. They never change location of their homestead before the erosion takes place. The main reason behind such behaviour is that they have little earnings that never allow them to replace their homesteads before it is totally collapsed. In our study we found that (table 8.10) before displacement 31.6% of households had used 1 bigha as homestead land, 51.9 % used 2 bighas and 16.9 % used 3 bighas land as homestead land. On the otherhand after displacement 55% of households got only 1 Katha (1/5 bigha) of land as homestead, 6.6 % of household get 2 katha land, 17.4% of household got 3 katha land and 21% of households got to use 1 bigha of land as homestead.

**Table 8.10 Homestead land used**

Size of land	Before Displacement	
	Frequency	Percentage
1 Bigha	211	31.6
2 Bigha	346	51.9
3 Bigha	110	16.9
Total	667	100.0
Size of land	After Displacement	
	Frequency	Percentage
1 Katha	367	55.0
2 Katha	44	6.6
3 Katha	116	17.4
1 Bigha	140	21.0
Source: Field Survey, 2018 Total	667	100.0

### 8.11 Patta land before and After Displacement:

Table 7.19 reveals that before displacement 63.8 % of households had 5 to 10 bighas of patta land, 25% of them had 10 to 15 bighas of patta land, 8.4 % of them had 15 to 20 bighas of patta land and 2.8% of household had 20 to 25 bighas of patta land. On the other hand due to displacement caused by river bank erosion these families have lost their entire land asset. They got only that portion of land asset which

**Table 8.11 Patta land Before and After Displacement**

Size of land	Before Displacement	
	Frequency	Percentage
5-10 Bighas	425	63.8
10-15 Bigha	167	25.0
15-20 Bighas	56	8.4
20-25 Bighas	19	2.8
Total	667	100.0
Size of land	After Displacement	
	Frequency	Percentage
1 Katha	173	55.0
2 Katha	81	12.1
3 Katha	119	17.8
4 katha	12	1.8
3 Bighas	6	0.9
4 Bighas	80	12.0
5 Bighas	196	29.4
Source: Field Survey, 2018 Total	667	100.0

was provided by the government at the time of rehabilitation. 25.9% of them got only 1 katha of patta land, 12.1% of them got 2 katha of patta land, 17.8% got 3 katha of patta land, 1.8 % of household got 4 katha of patta land. On the other hand 0.9% of them got 3 bighas of patta land. 12 % of them got 4 bighas of patta land whereas another 29.4 % household got 5 bighas of patta land. From this picture we have seen that due to displacement caused by river bank erosion the people loss their entire patta land.

### 8.12 Non-patta land Before and After Displacement:

**Table 8.12 Non-patta land Before and After Displacement**

Size of land	Before Displacement	
	Frequency	Percentage
Nil	6	0.9
1-5 Bighas	293	43.9
6-10 Bighas	368	55.2
Total	667	100.0
Size of land	After Displacement	
	Frequency	Percentage
Nil	667	100
Source: Field Survey, 2018 Total	667	100.0

Study reveals that 0.9 % of household did not have any amount of non patta land. 43.9 % of them had 1 to 5 bighas of non-patta land, 55.2 % of household enjoyed

6 to 10 bighas of non-patta land before displacement. On the other hand after displacement they got nothing in the form of non-patta land.

### 8.13 Cultivable land before and after Displacement:

**Table 8.13 Cultivable land before and after Displacement**

Cultivable land (Bighas)	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	0	0	282	42.3
1-5	142	21.3	385	57.7
6-10	304	45.6	0	0
11-15	171	25.6	0	0
15-20	50	7.5	0	0
Total	667	100.0	667	100.0

Source: Field Survey, 2018

Table 8.13 depicts that before displacement every households had cultivable land. 21.3 % of the households had 1 to 5 bighas of cultivable land. 45.6 % had 6 to 10 bighas, 25.6 % had 11 to 15 bighas of cultivable land. On the other hand due to river bank erosion people lost their entire land asset. So 42.8 % of the respondent household have not been able to arrange cultivable land. But 57.7 % of them got 1 to 5 bighas of land. Majority of them got 1 bigha of land which are efficient for cultivable.

### 8.14 Plantation area before and after Displacement:

Table 8.14 depicts that before displacement only 2.5 % of the respondent household did not have any plantation area. 30.6 % of the respondent household had 1 bigha of plantation area, 29.1 % of them had 2 bighas, 11.1 % of them had 3 bighas, 5.5 % had 4 bighas, 6.5 % of them had 5 bighas, 8.1 % had 6 bighas and 6.6 % of them had 8 bighas of plantation areas. On the other hand after displacement none of the respondent households have any plantation area.

**Table 8.14 Plantation area before and after Displacement**

Plantation Area	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Nil	17	2.5	667	100.0
1 Bigha	204	30.6	0	0
2 Bigha	194	29.1	0	0
3 bigha	74	11.1	0	0
4 Bigha	37	5.5	0	0
5 Bigha	43	6.5	0	0
6 Bigha	54	8.1	0	0
7 Bigha	0	0	0	0
8 Bigha	44	6.6	0	0
Total	667	100.0	667	100.0

Source: Field Survey, 2018

### 8.15 Plantation area of Kesseruplants, Mulberry and Someplants area before and after Displacement:

**Table 8.15 Plantation of Kesseruplants, Mulberryplants and Someplants area**

Type	Area	Before Displacement		After Displacement	
		Frequency	Percentage	Frequency	Percentage
Kesseruplants	Nil	633	94.9	667	100.0
	1-4 Bighas	34	5.1	0	0
	Total	667	100.0	667	667
Mulberry	Nil	634	95.1	667	100.0
	1-4 Bighas	33	4.9	0	0
	Total	667	100.0	667	667
Some Plants	Nil	635	95.2	667	100.0
	1-4 Bighas	32	4.8	0	0
	Total	667	100.0	667	667

Source: Field Survey, 2018

Study reveals that (table 8.15) before displacement 5.1 % of the respondent households had kesseruplants, 4.9 % of them had mulberry plantation and 4.8 %

of the households had someplants about 1 to 4 bighas. But after displacement none of them have any kesseruplants, mulberry plants, and someplants. This implies that before displacement some people engaged with sericulture. But after displacement they have bound to shift their livelihood to another sector.

### 8.16 Number of ponds before and after displacement:

From table 8.16 we have seen that before displacement 26.7 % of the sample households did not have any pond but 73.3 % of them had one pond each. On the other hand after displacement none of the families are having ponds.

**Table 8.16 Number of ponds before and after displacement**

No. of Ponds	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	178	26.7	667	100.0
1	489	73.3	0	0
Total	667	100.	667	100.0

Source: Field Survey, 2018

### 8.17 Number of Cattle of the families:

**Table 8.17 Number of Cattle of the families**

Number of Cattle	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	4	0.6	311	46.6
1-5	281	42.1	307	46.0
5-10	147	22.0	49	7.4
10-15	17	2.6	0	0
15-20	19	2.9	0	0
More than 20	199	29.8	0	0
Total	667	100.	667	100.0

Source: Field Survey, 2018

Source: Field Survey, 2018

### 8.18 Number of Milch Cattle of the families:

**Table 8.18 Number of Milch Cattle of the families.**

Number of Milch Cattle	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	52	7.8	150	22.3
1-5	219	32.8	449	67.3
5-10	100	15.0	68	10.2

Source: Field Survey, 2018

Table 8.18 shows that before displacement 7.8 % of the respondent households did not have any number of milch cattle, 32.8 % of them had 1-5 numbers of milch cattle, 15.0 % had 5-10 numbers of milch cattle, 5.1 % had 10-15 numbers of milch cattle, 1.2 % of them had 15-20 numbers of milch cattle and 38.1 % of the respondent households had more than 20 numbers of milch cattle. On the other hand after displacement 22.5 % of the respondent families do not have any milch cattle, 67.3 % of them have 1-5 numbers of milch cattle and 10.2 % of them have 5-10 numbers of milch cattle.

### 8.19 Number of pigs:

Table 8.19 reveals that before displacement 79.2 % of the respondent households did not have any pig. Only 1 % had 10 to 15 number of pigs and 1.5 % of them had more than 15 number of pigs. But after displacement 81.3 % of them did not have any pigs. 16.8 % of them have 1 to 5 number of pigs, 1.5 % of them have 5 to 10 numbers and 0.4 % of the respondent families have 10 to 15 number of pigs.

**Table 8.19 Numbers of Pigs**



Numbers of Pigs	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	528	79.2	542	81.3
1-5	122	18.3	112	16.8
10-15	0	0	10	1.5
More than 15	10	1.5	0	0
Total	667	100.0	667	100.0

Source: Field Survey, 2018

**8.20 Number of buffaloes****Table 8.20 Number of buffaloes**

Numbers	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	448	67.2	663	99.4
1-5	30	4.5	64	9.6
5-10	3	0.4	6	0.9
10-15	5	0.7	6	0.9
More than 15	10	1.5	0	0
Total	667	100.0	667	100.0

Source: Field Survey, 2018

Table 8.20 shows that before displacement 67.2 % of the respondent households did not have buffaloes. 4.5 % of them had 1 to 5 numbers of buffaloes, 0.4 % of them had 5 to 10 numbers and 0.7 % of them had 10 to 15 numbers of buffaloes. But after displacement 99.4 % of the respondent households did not have buffaloes and only 0.6 % of the households have 1 to 5 numbers of buffaloes.

**8.21 Number of Poultry:****Table 8.21 Number of Poultry**

Numbers	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
None	17	2.6	57	8.6
1-5	32	4.8	336	50.4
5-10	106	15.9	135	20.2
10-15	8	1.2	10	1.5
More than 15	10	1.5	0	0
Total	667	100.0	667	100.0

From Table 8.21 we have seen that before displacement only 2.6 % of the respondent households did not have any poultry. 4.8 % of them had 1 to 5 numbers of poultry, 15.9 % had 5 to 10 numbers of poultry, 1.2 % and 1.5 % of the respondent households had 10 to 15 numbers and 15 to 20 numbers of poultry respectively. It is mentionable that 74.8 % of the households had more than 20 numbers of poultry. On the other hand after displacement 9.6 % did not have any poultry, 50.4 % of them have 1 to 5 numbers of poultry, and 20.2 % of the households have 5 to 10 number of poultry, 1.5 % and 11.1 % of the households have 10 to 15 numbers and 15 to 20 number of poultry respectively.

**9. ECONOMIC LOSS DUE TO RIVER BANK EROSION:**

Due to river bank erosion we have seen the following type of economic loss of the respondent households:

**9.1 Economic loss due to homestead land erosion:**

In our study the total sample households are 667. The table 9.1 reveals the economic loss due to erosion of homestead land. 211 numbers of the households lost 1 bigha of homestead land worth Rs. 527.5 lakh. 346 families lost 2 bighas of homestead land worth Rs 1730 lakh. And 110 respondent households lost 3 bighas of homestead land worth Rs. 825 lakh. Total economic loss due to homestead land erosion is worth Rs. 3082.5 lakh.

**Table 9.1 Economic loss due to homestead land erosion**

Size of land lost	No. of Households	Per bigha Money Value (Rs. 2.5 Lakh)	Total Money Value (In Lakh)
1 Bigha	211	527.5	111302.5
2 Bigha	346	1730	598580
3 Bigha	110	825	90750
Total	667		3082502.5

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

The Table 9.2 reveals that 47 households lost 5 bighas of patta land worth Rs. 423.0 lakh. 5 number of households lost 6 bighas of land worth Rs 54 lakh. Again 138 numbers of households lost 8 bighas of patta land as worth Rs. 1987.2 lakh, 235 households lost 10 bighas of patta land worth Rs. 4230 lakh. By the same way 11 households lost 11 bighas of land worth Rs- 217.8 lakh, 89 households lost 12 bighas of patta land worth Rs. 1922.4 lakh, 7 households lost 13 bighas of land

worth Rs. 163.8 lakh. Again 36 households lost 14 bighas of patta land worth Rs. 907.2 lakh, 24 numbers of households lost 15 bighas of land as worth Rs. 648 lakh, 7 respondent households lost 16 bighas of land worth Rs. 201.6 lakh, 1 household lost 17 bighas of land worth Rs. 30.6 lakh, 3 numbers of households lost 18 bighas of patta land worth Rs. 97.2 lakh. Then 45 households lost 20 bighas of patta land as worth Rs. 1620 lakh, 19 numbers of household lost 25 bighas of patta land worth Rs. 855 lakh. By this way 667 sample households lost a sum total of Rs. 13,357.4 lakh amount.

**Table 9.2 Economic loss due to Patta land erosion**

Size of Patta land	No. of Households	Per Bigha Money Value (Rs. 1.8 Lakh)	Total Money Value (In Lakh)
5 Bigha	47	8	423.0
6 Bigha	5	10.8	54.0
8 Bigha	138	14.4	1987.2
10 Bigha	235	18	4230.0
11 Bigha	11	19.8	217.8
12 Bigha	89	21.6	1922.40
13 Bigha	7	23.4	163.8
14 Bigha	36	25.2	907.2
15 Bigha	24	27	648.0
16 Bigha	7	28.8	201.6
17 Bigha	1	30.6	30.6
18 Bigha	3	32.4	97.2

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

**9.3 Economic loss due to Non-patta land erosion:**

Table 9.3 depicts that 6 households have not lost any kind of non-patta land. 293 households lost 5 bighas of non-patta land worth Rs. 1465 lakh. In the same way 75 households lost 6 bighas of non-patta land as worth Rs 450 lakh, 45 households lost 7 bighas of nonpatta land as worth Rs. 525 lakh, 91 numbers of household lost 8 bighas of non-patta land worth Rs. 728 lakh and 26 households lost 10 bighas of non-patta land worth Rs.260 lakh. By this way total sample of 667 households lost a sum total of Rs.3428 lakh amount.

**Table 9.3 Economic loss due to Non-patta land erosion**

Non-patta Land	No. of Households	Per Bigha Money Value (Rs. 1 Lakh)	Total money value (In Lakh)
Nil	6	-	-
5	293	5	1465
6	75	6	450
7	45	7	315
8	91	8	728
10	26	10	260

**9.4 Economic loss due to erosion of Cultivable land.**

Table 9.4 depicts that 5 respondent families lost 3 bighas of cultivable land Rs. 1.8 lakh per money value as per bigha a sum of worth Rs. 27 lakh. 96 households lost 4 bighas of cultivable land worth Rs. 691.2 lakh, 41 households lost 5 bighas of cultivable land worth Rs. 369 lakh, 27 households lost 6 bighas of cultivable land which tends to lead a loss of worth Rs. 291.6 lakh of money value. In the same way 84 households lost 7 bighas of cultivable land worth Rs. 1058.4 lakh of money value, 193 respondent households loss 8 bighas of cultivable.

**Table.9.4 Economic loss due to erosion of Cultivable land.**



sion of Kesseruplants area.

**Table 9.6 (B) Economic Loss due to erosion of Mulberry Plants Area**

Area	No. of Household	Per Bigha Money Value (Rs. 2.5 Lakh)	Total Money Value (In Lakh)
Nil	634	0	0
1	15	5	75.0
2	5	10	50.0
3	11	16	82.5
4	5	20	100.0
5	3	25	75.0
Total	634	75.5	312.5

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

Table 9.6 (B) reveals that 634 numbers of the respondent households did not have any Mulberry plants area prior to displacement. 2 households had lost 1 bigha of Mulberry plants area worth Rs 5 lakh. 15 households lost 2 bighas of Mulberry plants area worth Rs. 75 lakh, 5 households lost 3 bighas of mulberry plants area worth Rs. 82.5 lakh and 11 household lost 4 bighas of Mulberry plants area worth Rs. 100 lakh. In this way the 33 respondent households lost a sum worth Rs.212.5 lakh due to erosion of Mulberry plants area.

**Table 9.6 (C) Economic Loss due to erosion of Someplants Area**

Area	No. of Household	Per Bigha Money Value (Rs. 3 Lakh)	Total Money Value (In Lakh)
Nil	635	0	0
1	3	9	27
2	14	6	84
3	9	12	108
4	8	15	120
5	7	18	126
Total	635	54	345

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

Table 9.6 (C) reveals that 635 numbers of the respondent households did not have any Someplants area prior to displacement. 3 households lost 1 bigha of Someplants area worth Rs 9 lakh. 14 households lost 2 bighas of Someplants area worth Rs. 84 lakh, 9 households lost 3 bighas of Someplants area worth Rs. 108 lakh and 7 numbers of respondent household lost 4 bighas of Someplants area worth Rs. 126 lakh. In this way the 32 respondent households lost a sum worth Rs.249 lakh due to erosion of Someplants area.

#### 9.7 Economic loss due to erosion of Ponds:

**Table 9.7 Economic loss due to erosion of Ponds**

No. of Ponds	No. of Household	Per Pond Money Value (Rs. 1.5 Lakh)	Total Money Value (in Lakh)
None	178	0	0
1	1	1.5	1.5
Total	178	1.5	2.25

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

Table 9.7 depicts that due to loss of pond 1 respondent households lost a sum worth Rs. 1.5 lakh. Only 178 respondent households lost nothing because they did not have ponds prior to displacement.

#### 10. TYPE OF WORK OF THE RESPONDENT BEFORE AND AFTER DISPLACEMENT:

**Table 10.1 Type of work of the Respondent**

Type of work	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Agriculture	280	42.7	39	5.8
Wage Labourer	37	5.5	348	52.2
Pottery	253	37.9	0	0
Weaving	28	4.2	6	0.9
Horticulture	9	1.3	0	0

Cultivable Land	No. of Household	Per Bigha money Value (Rs. 1.8)	Total money Value (In Lakh)
3 Bigha	5	5.4	27.0
4 Bigha	96	7.2	691.2
5 Bigha	41	9	369.0
6 Bigha	27	10.8	291.6
7 Bigha	84	12.6	1058.4
8 Bigha	193	14.4	2779.2
13 Bigha	58	23.4	1357.2
14 Bigha	9	25.2	226.8
15 Bigha	104	27	2808.0
Total	667	18.8	1258.8

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

Table 9.5 depicts that 7 households did not have any plantation area prior to displacement. 204 households lost 1 bigha of plantation area including bamboo trees worth Rs. 408 lakh, 194 households lost 2 bighas of plantation area worth Rs. 776 lakh. In the same way 74 households lost 3 bighas of plantation area worth Rs 444 lakh, 37 households lost 4 bighas of plantation area worth Rs. 296 lakh, 43 households lost 5 bighas of plantation area as worth Rs.430 lakh, 54 households lost 6 bighas of plantation area worth Rs. 648 lakh and 44 respondent households lost 8 bighas of plantation areas worth Rs. 704 lakh. Due to erosion of plantation area 667 respondent households lost a sum total of worth Rs. 3706 lakh.

#### 9.5 Economic loss due to erosion of Plantation Area:

**Table 9.5 Economic lost due to erosion of Plantation Area**

Plantation Area	No. of Households	Per bigha Money Value (Rs.2 Lakh)	Total Money Value (In Lakh)
Nil	7	0	0
1	204	2	408
2	194	4	776
3	74	6	444
4	37	8	296
5	43	10	430
6	54	12	648
8	44	16	704
Total	667	12	3706

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

#### 9.6 Economic loss due to erosion of Plantation Area of Kesseruplants, Mulberry plants and Someplants.

Kesseruplants, mulberry and someplants have high economic value because because from these people create Endi, Pat and Muga clothes which have local as well as foreign demand. Due to erosion Majuli lost a lots of Kesseruplants, mulberry and Someplants area which have high economic value in the field of Sericulture.

**Table 9.6 (A) Economic Loss due to erosion of Kesseru Plants Area**

Area	No. of Household	Per Bigha Money Value (Rs. 2 Lakh)	Total Money Value (In Lakh)
Nil	633	0	0
1	2	4	8
2	21	8	168
3	8	12	96
4	3	16	48
5	3	20	60
Total	633	40	252

Source: Field Survey, 2018 (Data Source, SDC Office Kamalabari)

Table 9.6 (A) reveals that 633 respondent households did not have any Kesseruplants area prior to displacement. Only 2 households had 1 bigha of Kesseruplants area. Due to erosion of this area the households lost a sum of worth Rs. 8 lakh. 21 respondent households lost 2 bighas of Kesseruplants area worth Rs. 168 lakh and 8 households lost 3 bighas of Kesseruplants area worth Rs. 96 lakh and 3 respondent households lost 4 bighas of Kesseruplants area worth Rs. 120 lakh. In this way the 34 households lost a sum of worth Rs. 252 lakh due to erosion of Kesseruplants area.

Fishing	55	8.2	1	0.1
Carpenter	0	0	68	10.2
Service	0	0	109	16.3
Business	0	0	32	4.8

Source: Field Survey, 2018

Study reveals that due to displacement caused by riverbank erosion major effects are seen in the occupation of the displaced people. They were bound to change their type of work. Table 10.1 reveals that before displacement 42.7 % of the households had agriculture as a main occupation but after displacement it is reduced to 5.8 %. Again 5.5% of the respondents were engaged as wage labourers as a main occupation but after displacement 52.2 % of the respondents worked as wage labourers as their main occupation. Another picture is seen that before displacement 37.9 % of the respondent household took pottery as the main occupational source but after displacement none of them has got the opportunity to take pottery as their type of work source. Before displacement 4.2 % of them took weaving as an occupation but after displacement it is reduced to only 0.9 %. Again before displacement 1.3 % of the households' main occupation was horticulture but after displacement none of them has taken horticulture as an occupational source. 8.2 % of the respondent households' main occupation was fishing before displacement but after displacement it reduced to only 0.1 %. Study reveals that many people, after displacement engaged them in carpentry (10.2 %), business (4.8 %), service (16.3%), and boat making (1.5%). Those who were engaged in services were employed as security persons, private sector employees, soldiers and teachers (in government and private institutions). Unfortunately 4.2% of them were unemployed..

## 10.2 Type of work of the Respondents Parents before and after Displacement:

**Table 10.2 Type of work of the Respondents Parents before and after Displacement**

Type of work	Before Displacement		After Displacement	
	Frequency	Percentage	Frequency	Percentage
Agriculture	310	46.5	0	0
Wage Labourer	115	17.2	467	70.0
Carpenter	17	2.6	140	21.0
Pottery	180	27.0	18	2.7
Weaving	19	2.8	28	4.2
Horticulture	6	0.9	0	0
Fishing	20	3.0	1	0.1

Source: Field Survey, 2018

Table 10.2 reveals that before displacement 46.5 % of the respondents' parents took agriculture as main occupation but due to immediate effect of loss of their agricultural land it has come down to zero percent after displacement. The major change has seen in the wage labourer because before displacement 17.2 % of the parents were involved as wage labourers but due to displacement as an immediate adjustment 70 % of them engaged as wage labourers. Again in case of pottery industry 27 % of them were engaged before displacement but as a result of displacement it has come down to 2.7 %. Prior to displacement in case of weaving 2.8 % of them were engaged but after displacement it has increased slightly to 4.2 %. Occupations of fishing 3% of them were engaged but after displacement it has come down to only 0.1 %. But before displacement none of them engaged in service and business sector but after displacement 0.7 % of them engaged in service and 1.2 % of them engaged in business.

From the study we have seen that river bank erosion has an adverse impact on the socio-economic profile of the displaced people from Majuli. River bank erosion seriously affects the livelihood of the affected people. Being affected many people become assetless, homeless, landless; in a word, poor over night. They lose homestead, house, cultivable lands, and many other properties. After being displaced the displacees first need is to find out some place where they can resettle. Under these circumstances getting shelter becomes a difficult issue for them. So, Government have to come forward to resettle them. But the displacees were forced to accept their loss due to riverbank erosion displacement. They did not have any alternative way of loss acceptance as they failed to protect their cultivable land, homestead plot, plantation areas, livestock and other valuable properties from cataclysm of riverbank erosion. The displacees accepted their loss due to erosion. River bank erosion displacement breakdown the family structure, socio-economic characteristics also changed.

From the study we have also seen that the type of work of the displaced people changed. They are bound to change their type of work as occupation. Before displacement 42.7 % of the respondent household's main occupation was agricul-

ture but after displacement it is reduced to 5.8 %. On the other hand after displacement 52.2 % of the respondent worked as wage labourers as their main nature of work. Due to displacement occupational diversification is seen. Here our study we have seen that due to displacement government intervention was very urgent. Hence government resettled and rehabilitated the displaced people. After displacement the housing conditions and livelihood pattern of the displaced people have changed. By this way we found the answer of the first research question that there has been a change in the type of work of the displaced people of the study area.

## 7.4 CONCLUSION:

From the above analysis we can conclude that there has been a substantial socio-economic change in the life of the displaced people from Majuli. The economic loss incurred by the displaced people is manifested in terms of the money value lost in forgoing homestead land, plantation area, cultivable land, potta land, non-potta land, pods, plantation area of Kesseru plants, Mulberry plants and Some pottas.

## REFERENCES:

- I. Albert A. Abegunde, Samson A. Adeyinka, Peter O. Olawuni, and Olufunmilayo A. Oluodo: "An Assessment of the Socio Economic Impacts of Soil Erosion in South-Eastern Nigeria", Shaping the Change, XXIII FIG Congress Munich, Germany, October 8-13, 2006
- II. Black, R.: Refugees and environmental change: global issues. Unpublished report, Department of Geography, King's College London 1993
- III. Borgohain, J. (2012): "Erosion in Rohmoria: Emerging Conflicts and Related Issues". waterconflictforum.org/.../Juli Borgohain-Odisha-Case-Study-final26122011.pdf- 24 Dec. 2011
- IV. Elahi, K.M. and John R. Rogge 1990 Riverbank Erosion, Flood and Population Displacement in Bangladesh: A Report on the Riverbank Erosion Impact Study. Dhaka: Riverbank Erosion Impact Study, Jahangirnagar University
- V. Hussain, Monirul: Internally Displaced Persons in India's North-East: Economic and Political Weekly, Vol.41, No 5, (Feb.4-10, 2006) Pp.391-393
- VI. Islam, Md. Zulfikar Ali : 1999a "Socio-economic Loss of the Riverbank Erosion Displacees in Riverine Bangladesh: A Case of Precarious Habitat", A papersubmitted for publication in the forthcoming issue of Journal of the Institute of Bangladesh (Bangladesh), Vol. XXIII, 2000.
- VII. Islam, Md. Zulfikar Ali : 1999a "Socio-economic Loss of the Riverbank Erosion Displacees in Riverine Bangladesh: A Case of Precarious Habitat", A papersubmitted for publication in the forthcoming issue of Journal of the Institute of Bangladesh (Bangladesh), Vol. XXIII, 2000.
- VIII. Jahangir, B.K. 1979 Differentiation, Polarization and Contgrontation in Rural Bangladesh, Dhaka: Centre for Social Studies.
- IX. Karim, A.H.M. Zehadul 1990 The Pattern of Rural Leadership is an Agrarian Society: A Case Study of the Changing Power Structure in Bangladesh. New Delhi: Northern Book Centre.
- X. Klassen, G.J., Douben, K.J. and Waal, M.V.D., (2002), Novel approaches in river engineering, In Bousmar and Zech (eds), The River Flow, pp 27-43.
- XI. Kotoky, P., Bezbaruah, D., Baruah, J. & Sarma, J.N.(2003): Erosion activity on Majuli- the largest river island of the world. Current Science, 84, 929-932.
- XII. Lahiri, S. K., and Borgohain, J.: "Rohmoria's Challenges: Natural Disaster, popular Protests and State Apathy", Economic & Political Weekly, January 8, 2011, VOL XLVI No.2, pp 31-35
- XIII. Lane, E.W., (1955), The importance of fluvial morphology in hydraulic engineering, Proc. Am. Soc. Civil engineering, 81, pp 1-17.
- XIV. Mark Wyman: Dps: Europe's Displaced Persons, 1945-1951, Cornell University Press 1998 (reprint). ISBN 0-8014-8542-8.
- XV. OMAFRA Staff; G. Wall - Ontario Institute of Pedology; C.S. Baldwin - Ridgetown College of Agricultural Technology; I.J. Shelton - Ontario Institute of Pedology
- XVI. Rahman, Atiur 1986 Impact of Riverbank Erosion: Survival Strategies of Displacees, ADAB NEWS, Vol. XIII, #4: July-August.
- XVII. Rudra Kalyan 2003. The Encroaching Ganga and Social Conflicts: The Case of West Bengal, India. Department of Geography, Habra S.C. Mahavidyalaya (College), West Bengal, India.
- XVIII. Sarma, J.N. & Phukkan, M.K. (2004) Origin and some geomorphologicac changes of Majuli Island of the Brahmaputra River in Assam, India, Geomorphology, 60, 1-19.
- XIX. Sarma, J.N. and Acharjee, S (2012): "Bank erosion of the Brahmaputra River and Neotectonic activity around Rohmoria Assam, India", Jour. Comunicacoes Geologicas (2012) 99, 1,33-38.
- XX. Sarma, J.N. and Phukan, M.K. (2006): "Bank erosion and bankline migration of the river Brahmaputra in Assam, India, during the twentieth century", Jour. Geol. Society of India (68), pp 1023-1036.